# Impact-E20 user manual

Part No 85070154 Issue A2

Amplicon

# Introduction

Impact-E series: The Impact industrial computers incorporate "industrial motherboards" to provide the repeatability and revision control normally associated with SBCs.

The new Impact-E range has a small, compact and fanless rugged design, ideally suited to a variety of space-critical embedded applications. Powered by Intel processors, these computers can provide the performance necessary for high speed and intensive tasks. Manufactured from selected high components, the Impact-E series is an ideal cost-effective solution for use in harsh environments and critical 24/7 operations.

# Introduction

## Declaration of Conformity

### CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. Please contact your local supplier for ordering information.

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

### FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## Installation Suggestions

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

A Philips screwdriver

A flat-tipped screwdriver

A grounding strap

An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needlenose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

## Handling Precautions

1. Always disconnect the unit from the power outlet whenever you are installing or fixing a component inside the chassis.

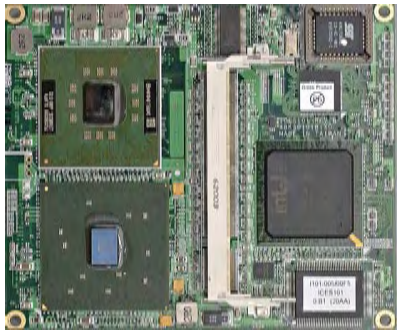
2. If possible, always wear a grounded wrist strap when you are installing or fixing a component inside the chassis. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.

3. Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress the circuit board.

4. Use the correct screws and do not overly tighten them.

5. Keep the original packaging and static-protective bag in case the unit has to be returned.

# Chapter 1 ETX Module Reference



## 1.1 Function Block Diagram

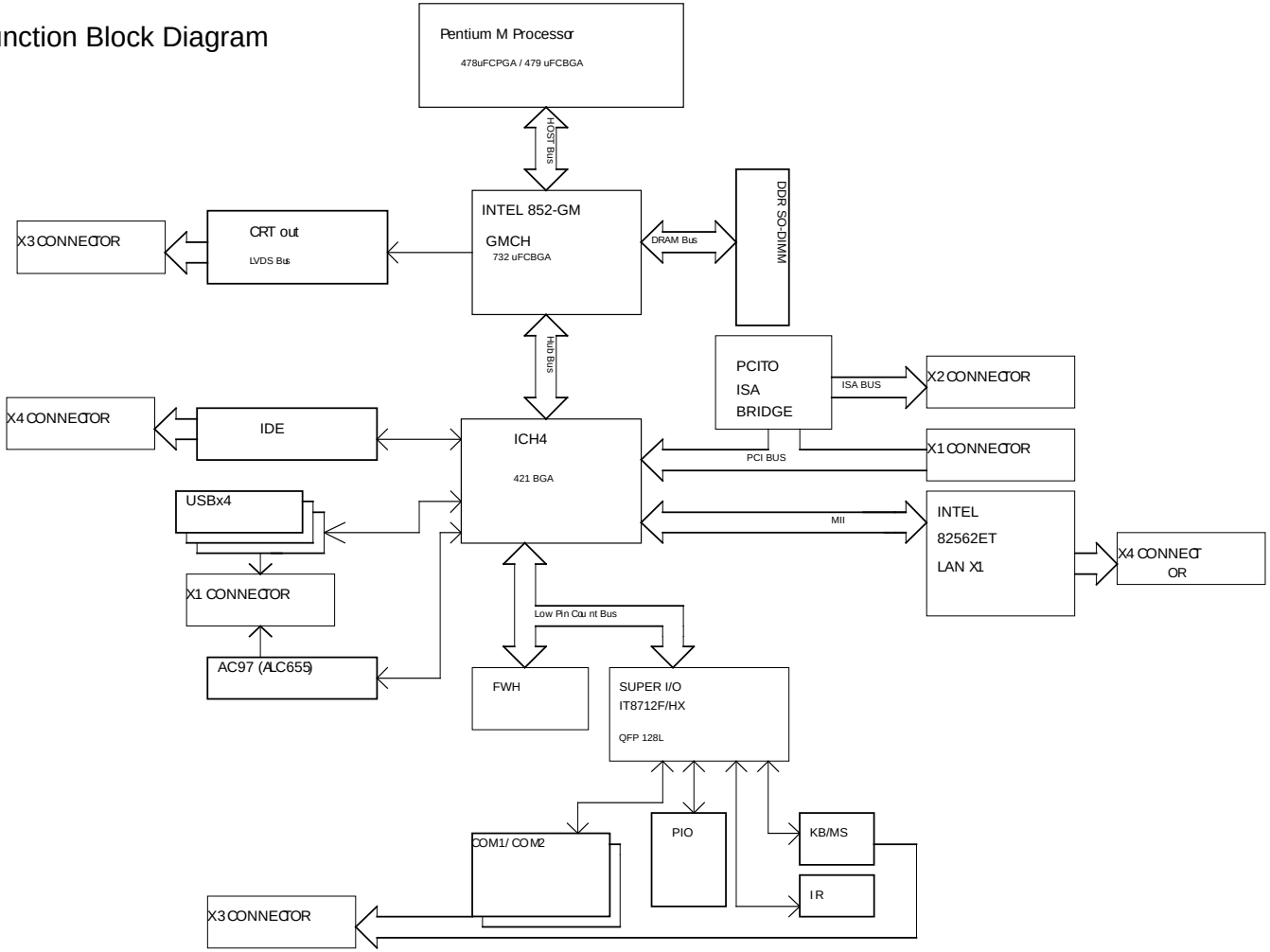
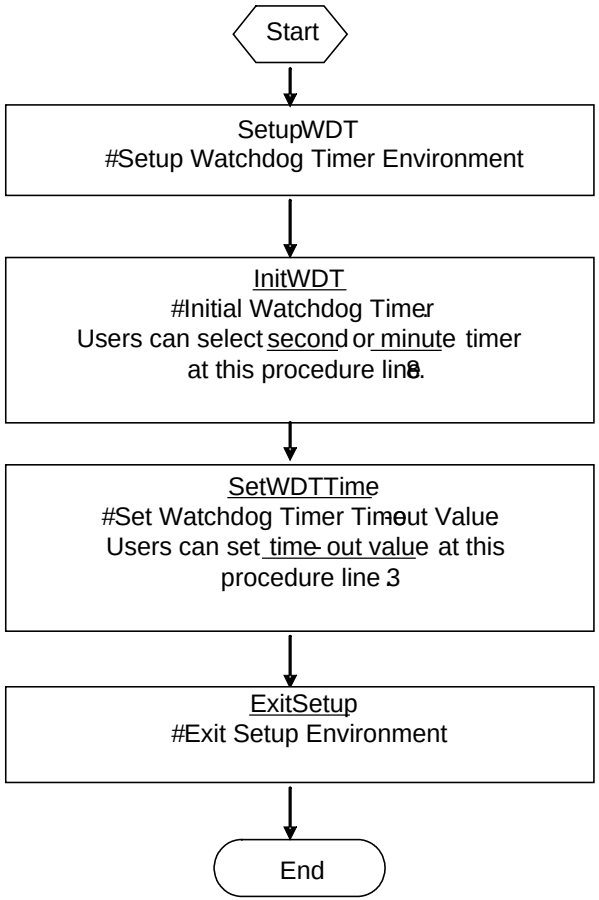



Figure 1.1: Function Block Diagram

## 1.2 Electrical Specifications

| | |
|---|---|
| CPU: | Intel® ULV Celeron® M 600 MHz |
| Chipset: | Intel® 852GM + ICH4 chipset |
| System Memory : | Supports one unbuffered nonECC DDR SO-DIMM 200/266 memory up to 1GB |
| Graphics: | Intel®852GM integrated Graphic, supports both standard VGA and TFT. |
| CRT: | Supports up to 1600 x 1200 at 85 Hz; 2048x1536 at 75 Hz |
| | DB15 CRT VGA connector x 1 |
| LVDS: | Supports up to 48-bit, 1600 x 1200 at 60 Hz |
| | Support single/dual pixel LVDS panel |
| | Onboard LVDS transmitter for LVDS Interface down to I/O Board. |
| Ethernet: | Intel 82562ET 10/100 Fast Ethernet |
| | Supports PXE LAN boot function |
| Audio: | ALC655 CODEC - AC97 Audio Interface |
| Super I/O: | IT8712F |
| ETX Connectors | |
| X1 | 32-bit/33Mhz PCI x 4 |
| | Audio CODEC - AC97 Audio Interface |
| | USB 2.0 x 4 |
| X2 | ISA Interface |
| X3 | VGA x 1 |
| | LVDS x 1 (Dual Pixels) |
| | LPT x 1 |
| | KB/Mouse |
| | COM1 and COM2 |
| | IrDA 1.0 SIR |
| X4 | Ethernet (10/100) |
| | SMBus |
| | IDE x 2 |
| RTC: | On-chip RTC with battery back up / External Li-ion Battery x 1 Located on Carrier Board |
| | RTC Tolerance less than 2 secs ( 24 hours ) under 25˚C environment |
| WatchDog: | Watchdog timeout programmable by Software from 1 second to 256 seconds. (Tolerance 5% under room temperature 25°C) |
| BIOS: | Award System BIOS |
| | Advanced Power Management support |
| | 4Mbit flash ROM |
| Power Supply: | Supports both AT and ATX Power Supply. |
| | +5V Power Only, follows ETX power and ground pin definitions. |
| Drivers: | Windows 2000/2003, XP, Linux |
| **Certifications:** | CE approval |
| | FCC Class A |
| Environment: | |
| | Operating temperature: 0°C to 60°C (32°F to 140°F) |
| | Storage temperature: -20°C to 85°C (-4°F to 185°F ) |
| | Relative humidity: Non-operating 5%~95%, non-con densing |
| Dimensions: | 95mm (W) x 114mm (L) (3.74” x 4.5”) |

## 1.3 Watchdog Timer Programming




P.S:Common library

```
=============================================================
===
0 SetupWDT      PROC
1         mov     al,87h
2         out     2eh,al
3         mov     al,01h
4         out     2eh,al
5         mov     al,55h
6         out     2eh,al
7         out     2eh,al
8
9         mov     al,07h
10        out     2eh,al
11        mov     al,07h
12        out     2fh,al
13        ret
14 SetupWDT     ENDP

=============================================================
===
0 InitWDT       PROC
1         mov     al,71h
2         out     2eh,al
3         mov     al,30h
4         out     2fh,al
5
6         mov     al,72h
7         out     2eh,al
8         mov     al,0c0h -Here!! set 0c0h for second, set 40h for minute
9         out     2fh,al
10        ret
```

```
11 InitWDT          ENDP

=============================================================
===
0 SetWDTTime    PROC
1           mov     al,73h
2           out     2eh,al
3           mov     al,5 -Here!! Set 5 sec.(time out vale: 0x00-0xff)
4           out     2fh,al
5           ret
6 SetWDTTime    ENDP

=============================================================
===
0 ExitSetup         PROC
1           mov     al,02h
2           out     2eh,al
3           mov     al,02h
4           out     2fh,al
5           ret
6 ExitSetup         ENDP
=============================================================
===
```

## 1.4 Board Layout

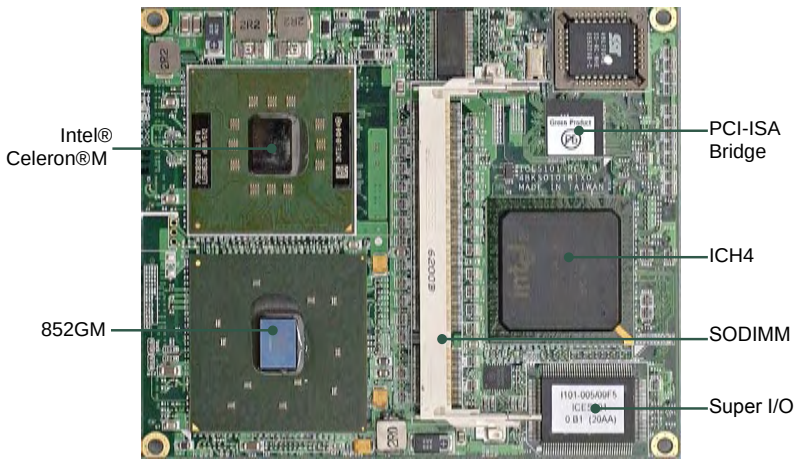



Figure 1.2: Top view

## 1.5 Dimensions

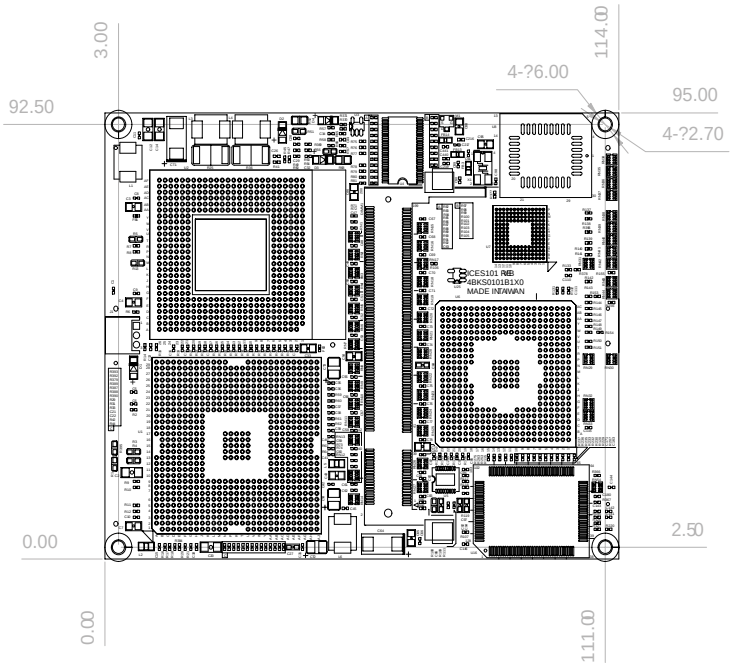



Figure 1.3: Dimensions

## 1.6 IRQ Assignments

Interrupt request lines let peripherals communicate with the CPU for the function required. The following list shows the IRQs used.

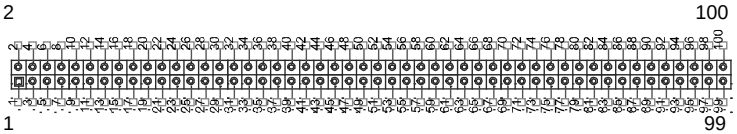
| Table 1.1: IRQ assignments |
|---|
| on board. |
| IRQ0 Timer |
| IRQ1 KBC |
| IRQ2 Iinternal |
| IRQ3 COMA |
| IRQ4 COMB |
| IRQ5 Parallel Port / Generic |
| IRQ6 FDC |
| IRQ7 Parallel Port / Generic |
| IRQ8 RTC |
| IRQ9 Generic |
| IRQ10 Generic |
| IRQ11 Generic |
| IRQ12 PS/2 Mouse |
| IRQ13 Internal |
| IRQ14 IDE1 |
| IRQ15 IDE2 |

## 1.7 PCI Device Interrupt and BUS Assignments

The ETX module supports PCI expansion fully compliant with the PCI specification.

| Table 1.2: PCI device interrupts | | | | |
|---|---|---|---|---|
| Chipset | Config. BUS / | | | |
| DEVIC/ FUNCTION | PCI INT# | IDSEL | Special feature de-scription | |
| ETX PCI(1) | 0 / 9 /0 | ABCD | AD19 | ETX |
| ETX PCI(2) | 0 / 10 /0 | BCDA | AD20 | ETX |
| ETX PCI(3) | 0 / 11 /0 | CDAB | AD21 | ETX |
| ETX PCI(4) | 0 / 12 /0 | ABCD | AD23 | ETX |
| DA82562ET | 0 / 8 / 0 | BCDA | AD24 | 10/100 PHY |
| IT8888G | 1 / 6 /0 | | AD22 | PCI to ISA BRIDGE |

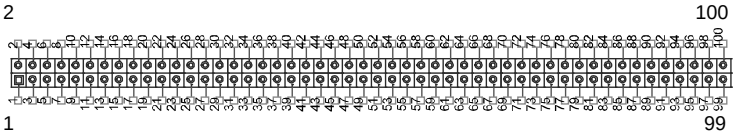
## 1.8 JP1 : ETX Connector (X1)~PCI BUS, AUDIO OUT, USB




| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | PCICLK2 | 4 | PCICLK3 |
| 5 | GND | 6 | GND |
| 7 | PCICLK0 | 8 | PCICLK1 |
| 9 | REQ3# | 10 | GNT3# |
| 11 | GNT2# | 12 | +3V |
| 13 | REQ2# | 14 | GNT1# |
| 15 | REQ1# | 16 | +3V |
| 17 | GNT0# | 18 | NC |
| 19 | VCC | 20 | VCC |
| 21 | SERIRQ | 22 | REQ0# |
| 23 | AD0 | 24 | +3V |
| 25 | AD1 | 26 | AD2 |
| 27 | AD4 | 28 | AD3 |
| 29 | AD6 | 30 | AD5 |
| 31 | CBE0# | 32 | AD7 |
| 33 | AD8 | 34 | AD9 |
| 35 | GND | 36 | GND |
| 37 | AD10 | 38 | AUXAL |
| 39 | AD11 | 40 | MIC |
| 41 | AD12 | 42 | AUXAR |
| 43 | AD13 | 44 | NC |
| 45 | AD14 | 46 | SNDL |
| 47 | AD15 | 48 | ASGND |
| 49 | CBE1# | 50 | SNDR |

| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 51 | VCC | 52 | VCC |
| 53 | PAR | 54 | SERR# |
| 55 | GPERR# | 56 | NC |
| 57 | PME# | 58 | USB2# |
| 59 | LOCK**#** | 60 | DEVSEL# |
| 61 | TRDY# | 62 | USB3# |
| 63 | IRDY# | 64 | STOP**#** |
| 65 | FRAME# | 66 | USB2 |
| 67 | GND | 68 | GND |
| 69 | AD16 | 70 | CBE2# |
| 71 | AD17 | 72 | USB3 |
| 73 | AD19 | 74 | AD18 |
| 75 | AD20 | 76 | USB0# |
| 77 | AD22 | 78 | AD21 |
| 79 | AD23 | 80 | USB1# |
| 81 | AD24 | 82 | CBE3# |
| 83 | VCC | 84 | VCC |
| 85 | AD25 | 86 | AD26 |
| 87 | AD28 | 88 | USB0 |
| 89 | AD27 | 90 | AD29 |
| 91 | AD30 | 92 | USB1 |
| 93 | PCIRST# | 94 | AD31 |
| 95 | INTC# | 96 | INTD# |
| 97 | INTA# | 98 | INTB# |
| 99 | GND | 100 | GND |

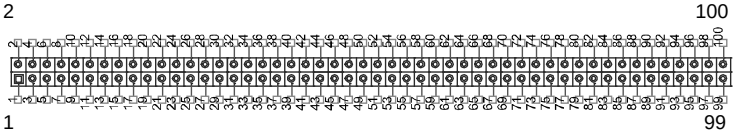
## 1.9 JP2 : ETX Connector (X2) ~ ISA BUS




| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | SD14 | 4 | SD15 |
| 5 | SD13 | 6 | MASTER# |
| 7 | SD12 | 8 | DREQ7 |
| 9 | SD11 | 10 | DACK7# |
| 11 | SD10 | 12 | DREQ6 |
| 13 | SD9 | 14 | DACK6# |
| 15 | SD8 | 16 | DREQ5 |
| 17 | MEMW# | 18 | DACK5# |
| 19 | MEMR# | 20 | DREQ0 |
| 21 | LA17 | 22 | DACK0# |
| 23 | LA18 | 24 | IRQ14 |
| 25 | LA19 | 26 | IRQ15 |
| 27 | LA20 | 28 | IRQ12 |
| 29 | LA21 | 30 | IRQ11 |
| 31 | LA22 | 32 | IRQ10 |
| 33 | LA23 | 34 | IO16**#** |
| 35 | GND | 36 | GND |
| 37 | SBHE# | 38 | M16# |
| 39 | SA0 | 40 | OSC |
| 41 | SA1 | 42 | BALE |
| 43 | SA2 | 44 | TC |
| 45 | SA3 | 46 | DACK2# |
| 47 | SA4 | 48 | IRQ3 |
| 49 | SA5 | 50 | IRQ4 |

| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 51 | VCC | 52 | VCC |
| 53 | SA6 | 54 | IRQ5 |
| 55 | SA7 | 56 | IRQ6 |
| 57 | SA8 | 58 | IRQ7 |
| 59 | SA9 | 60 | SYSCLK |
| 61 | SA10 | 62 | REFSH# |
| 63 | SA11 | 64 | DREQ1 |
| 65 | SA12 | 66 | DACK1# |
| 67 | GND | 68 | GND |
| 69 | SA13 | 70 | DREQ3 |
| 71 | SA14 | 72 | DACK3# |
| 73 | SA15 | 74 | IOR**#** |
| 75 | SA16 | 76 | IOW**#** |
| 77 | SA18 | 78 | SA17 |
| 79 | SA19 | 80 | SMEMR# |
| 81 | IOCHRDY | 82 | AEN |
| 83 | VCC | 84 | VCC |
| 85 | SD0 | 86 | SMEMW# |
| 87 | SD2 | 88 | SD1 |
| 89 | SD3 | 90 | NOWS**#** |
| 91 | DREQ2 | 92 | SD4 |
| 93 | SD5 | 94 | IRQ9 |
| 95 | SD6 | 96 | SD7 |
| 97 | IOCHK**#** | 98 | RSTDRV |
| 99 | GND | 100 | GND |

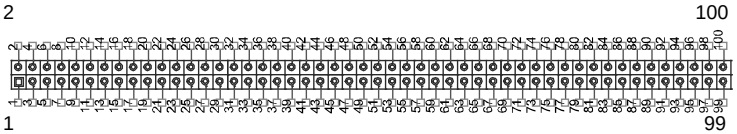
## 1.10 JP4 : ETX (X3)~VGA, CLK, VIDEO, COM, LPT, IR, MS/KB




| Pin | Definition | Pin | Definition |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | R | 4 | B |
| 5 | HSY | 6 | G |
| 7 | VSY | 8 | DDCK |
| 9 | | 10 | DDDA |
| 11 | LVDS_CLKBM | 12 | LVDS_YBM3 |
| 13 | LVDS_CLKBP | 14 | LVDS_YBP3 |
| 15 | GND | 16 | GND |
| 17 | LVDS_YBP1 | 18 | LVDS_YBP2 |
| 19 | LVDS_YBM1 | 20 | LVDS_YBM2 |
| 21 | GND | 22 | GND |
| 23 | LVDS_YAM3 | 24 | LVDS_YBP0 |
| 25 | LVDS_YAP3 | 26 | LVDS_YBM0 |
| 27 | GND | 28 | GND |
| 29 | LVDS_YAM2 | 30 | LVDS_CLKAP |
| 31 | LVDS_YAP2 | 32 | LVDS_CLKAM |
| 33 | GND | 34 | GND |
| 35 | LVDS_YAP0 | 36 | LVDS_YAP1 |
| 37 | LVDS_YAM0 | 38 | LVDS_YAM1 |
| 39 | VCC | 40 | VCC |
| 41 | NC | 42 | |
| 43 | NC | 44 | BLON# |
| 45 | BIASON | 46 | DIGON |
| 47 | NC | 48 | NC |
| 49 | NC | 50 | NC |

| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 51 | NC | 52 | NC |
| 53 | VCC | 54 | GND |
| 55 | STB# | 56 | AFD# |
| 57 | NC | 58 | PD7 |
| 59 | IRRX | 60 | ERR# |
| 61 | IRTX | 62 | PD6 |
| 63 | RXD2 | 64 | INIT# |
| 65 | GND | 66 | GND |
| 67 | RTS2# | 68 | PD5 |
| 69 | DTR2# | 70 | SLIN# |
| 71 | DCD2# | 72 | PD4 |
| 73 | DSR2# | 74 | PD3 |
| 75 | CTS2# | 76 | PD2 |
| 77 | TXD2 | 78 | PD1 |
| 79 | RI2# | 80 | PD0 |
| 81 | VCC | 82 | VCC |
| 83 | RXD1 | 84 | ACK# |
| 85 | RTS1# | 86 | BUSY |
| 87 | DTR1# | 88 | PE |
| 89 | DCD1# | 90 | SLCT# |
| 91 | DSR1# | 92 | MSCLK |
| 93 | CTS1# | 94 | MSDAT |
| 95 | TXD1 | 96 | KBCLK |
| 97 | RI1# | 98 | KBDAT |
| 99 | GND | 100 | GND |

## 1.11 JP3 ETX Connector (X4)~IDE, LAN, I2C, SMBUS, MISC




| Pin | Definition | Pin | Definition |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | 5V_SB | 4 | PWGIN |
| 5 | PS_ON | 6 | SPEAKER |
| 7 | PWRBTN# | 8 | BATT |
| 9 | NC | 10 | LILED# |
| 11 | RSMRST# | 12 | ACTLED# |
| 13 | NC | 14 | SPEEDLED# |
| 15 | NC | 16 | I2CLK |
| 17 | VCC | 18 | VCC |
| 19 | OVCR# | 20 | NC |
| 21 | EXTSMI# | 22 | I2DAT |
| 23 | SMBCLK | 24 | SMBDATA |
| 25 | SIDE_CS3# | 26 | SMBALRT# |
| 27 | SIDE_CS1# | 28 | NC |
| 29 | SIDE_A2 | 30 | PIDE_CS3# |
| 31 | SIDE_A0 | 32 | PIDE_CS1# |
| 33 | GND | 34 | GND |
| 35 | PDIAG_S | 36 | PIDE_A2 |
| 37 | SIDE_A1 | 38 | PIDE_A0 |
| 39 | SIDE_INTRQ | 40 | PIDE_A1 |
| 41 | BATLOW# | 42 | GPE1# |
| 43 | SIDE_AK# | 44 | PIDE_INTRQ |
| 45 | SIDE_RDY | 46 | PIDE_AK# |
| 47 | SIDE_IOR# | 48 | PIDE_RDY |
| 49 | VCC | 50 | VCC |

| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 51 | SIDE_IOW# | 52 | PIDE_IOR# |
| 53 | SIDE_DRQ | 54 | PIDE_IOW# |
| 55 | SIDE_D15 | 56 | PIDE_DRQ |
| 57 | SIDE_D0 | 58 | PIDE_D15 |
| 59 | SIDE_D14 | 60 | PIDE_D0 |
| 61 | SIDE_D1 | 62 | PIDE_D14 |
| 63 | SIDE_D13 | 64 | PIDE_D1 |
| 65 | GND | 66 | GND |
| 67 | SIDE_D2 | 68 | PICD_D13 |
| 69 | SIDE_D12 | 70 | PICD_D2 |
| 71 | SIDE_D3 | 72 | PIDE_D12 |
| 73 | SIDE_D11 | 74 | PIDE_D3 |
| 75 | SIDE_D4 | 76 | PIDE_D11 |
| 77 | SIDE_D10 | 78 | PIDE_D4 |
| 79 | SIDE_D5 | 80 | PIDE_D10 |
| 81 | VCC | 82 | VCC |
| 83 | SIDE_D9 | 84 | PIDE_D5 |
| 85 | SIDE_D6 | 86 | PIDE_D9 |
| 87 | SIDE_D8 | 88 | PIDE_D6 |
| 89 | NC | 90 | CBLID_P |
| 91 | RXD# | 92 | PIDE_D8 |
| 93 | RXD | 94 | SIDE_D7 |
| 95 | TXD# | 96 | PIDE_D7 |
| 97 | TXD | 98 | HDRST# |
| 99 | GND | 100 | GND |

## 1.12 Impact-E 20 Power Consumption

Impact-E 20 System Comprised of ETX Module + Carrier Board

| Table 1.3: Impact-E 20 power consumption | | | | | |
|---|---|---|---|---|---|
| System Configuration | | | | | |
| Model Name | OS | Memory | Storage | CPU | AP |
| Impact-E 20 | Win XP | 1G non-ECC, non-registered DDR SO-DIMM 333 memory | 40GB | Intel ULV Celeron® M 600 MHz | K Power + Burning Test |
| Value | Power Consumption | | | | |
| Theoretical Current * | 32.326W | | | | |
| Real Current One** | 15.84 ~ 16.56W | | | | |
| Real Current Two*** | 16.32 ~ 17.52W | | | | |
| Real Current Three**** | 12.72 ~ 12.96W | | | | |

Note:

*Theoretical Current means R&D designed power consideration with Onboard Devices ( Does not consider the Add-On devices )
**Real Current One means system with Maximum HD/CPU and Memory Loading/Usage under room temperature.
***Real Current Two means system with 25% HD/70% CPU and 50% Memory Loading/Usage under room temperature.
****Real Current Three means system without running K Power with OS in idle state under room temperature.

# Chapter 2 Carrier Board Reference

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## 2.1 Board Layout

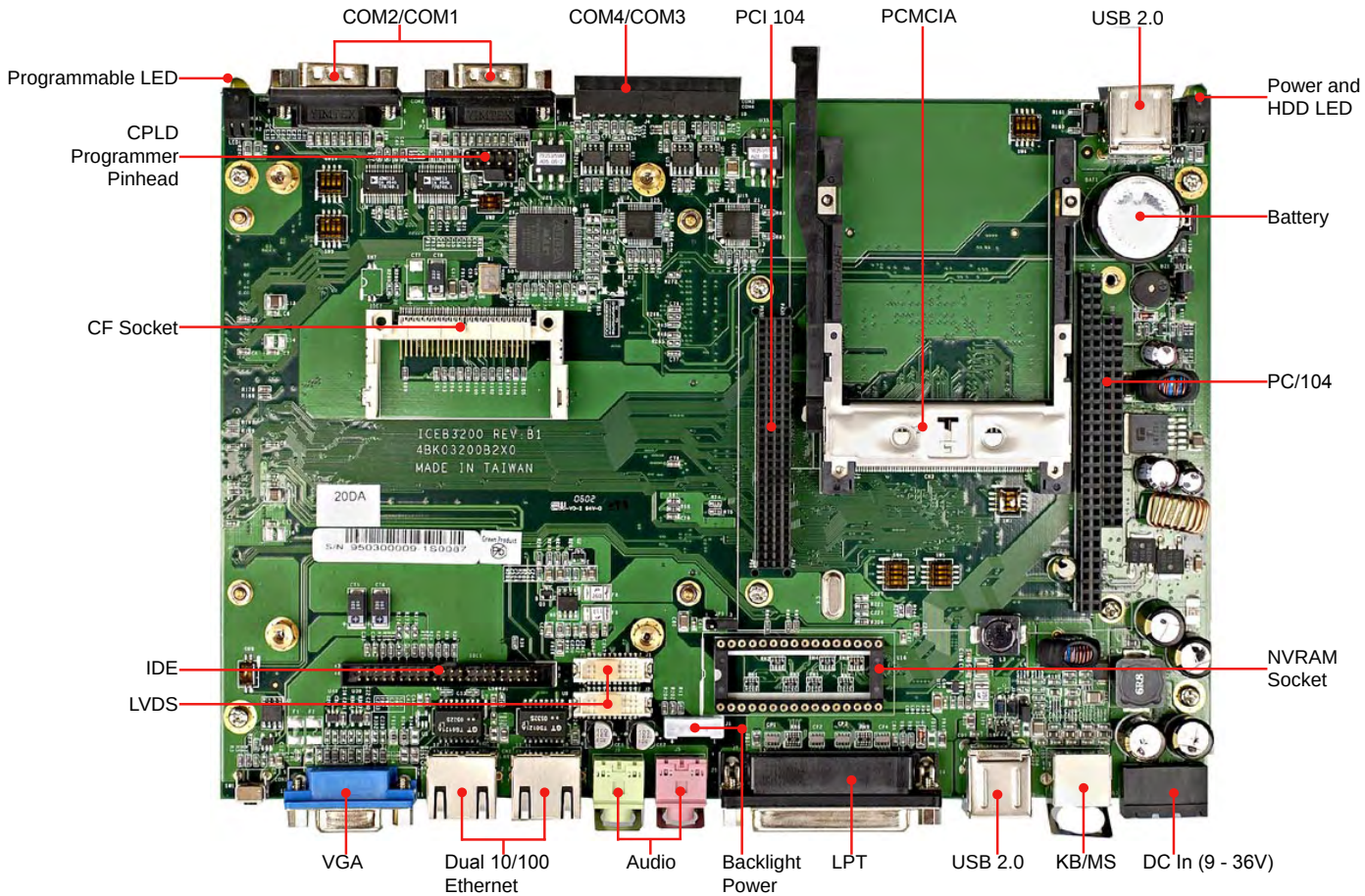
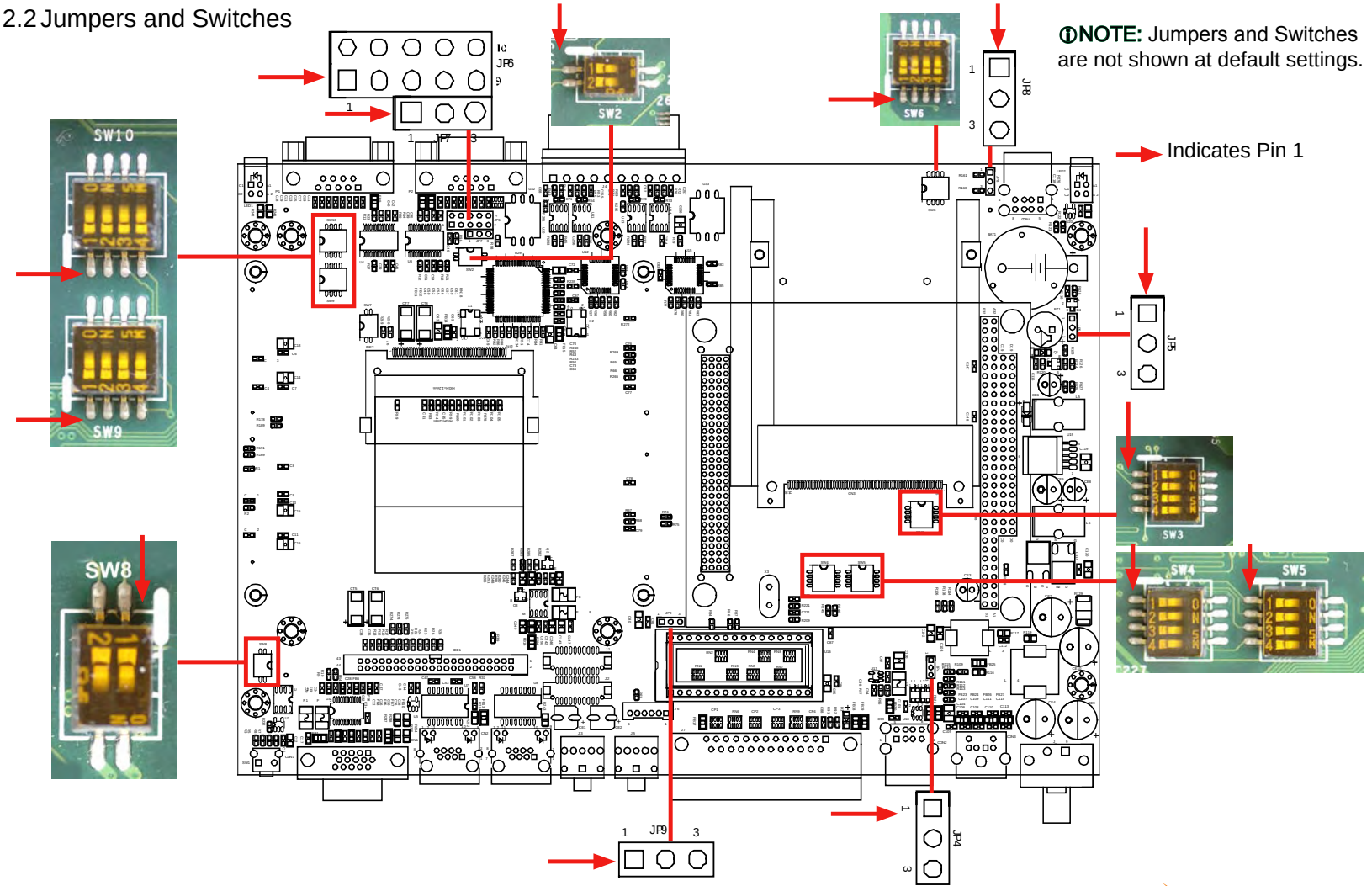


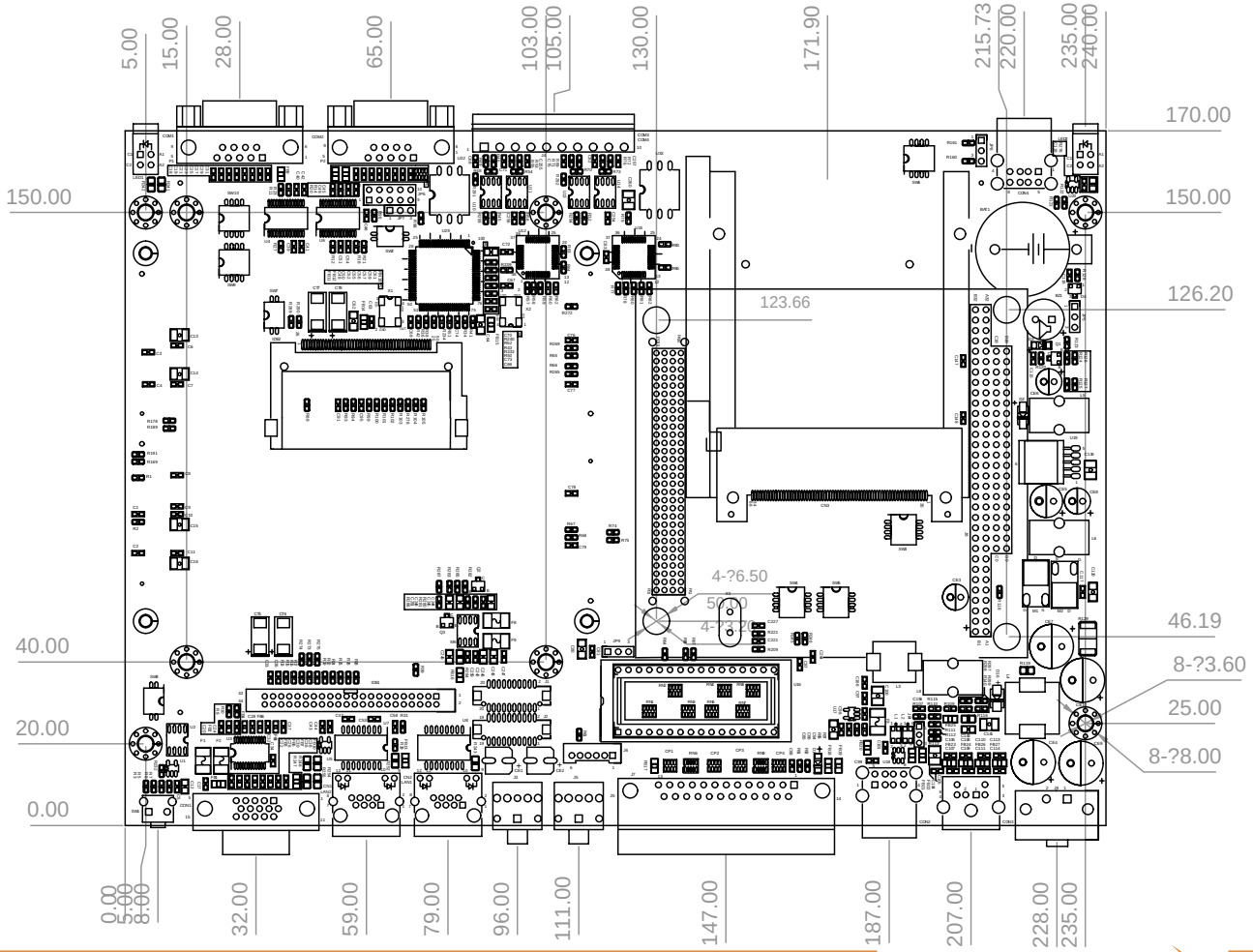

Figure 2.1: Board Layout

## 2.2 Jumpers and Switches




**NOTE:** Jumpers and Switches are not shown at default settings.

## 2.3 Carrier Board Dimensions



## 2.4 Impact-E20 Specifcations

IDE

- Internal CompactFlash socket x 1 ( Primary IDE )
- External Access Compact Flash Socket x 1 ( Secondary IDE )
- 44-pin IDE Connector x 1 (Primary IDE )

COM Ports

- COM 1 ~ 2 from ETX Module support RS232
- COM 3 ~ 4 via ISA Interface, support RS422/485
- Automatic RS-485 data flow control
- Optical Isolation, Max 2KV
- ±15KV ESD protected
- 10-pin Screw Terminal Connector ( Pin assignment: TBD )
- Speed: RS-422/485: 50 ~ 921.6 Kbps

USB 2.0

- USB 2.0 Ports x 2 in the Front
- USB 2.0 Ports x 2 in the Rear

PIO

- LPT Port x 1 ; 25-pin D-type supporting bi-directional, EPP and ECP modes

Audio

- From ETX Module:
- Audio Out
- Mic In

Graphics

- From ETX Module:
- Internal LVDS Interface
- Hirose DF13-20DP x 2 for Dual Pixels LVDS
- External Display Interface by Analog CRT DB15 VGA Con nector

Ethernet

- From ETX Module:
- 10/100 Fast Ethernet, RJ45 with LED connector x 1
- Carrier Board with On Fast Ethernet LAN Chip VIA VT6105 via PCI Interface. RJ45 with LED Connector x 1

Expansion

- PC/104-Plus ( ISA+PCI) x 1
- PCMCIA Socket x 1
- Supports CardBus 32-bit and 16-bit cards

Power Supply

- On-board DC to DC circuit support Power Input Range from +9V to +36VDC.
- Standard Configuration for NICE 3200 series models is +24VDC Input

**⚠WARNING:** If you use 9V~12V voltage, please change the JP4 to 1-2, and not +12V and -12V power output. Default JP4 is 3-4 while you use 13V~36V voltage.

LED and Others

On-board buzzer

One Reset Switch and Power LED and CF/HDD status LED

Two LEDs Connect to GPIO, that is programmable for Alarm or other purposed defined by developer. Provide User Inter face Utility of Windows 2K/XP and Linux for user to config ure the Alarm Status of Thermal or Voltage status on the front LEDs.

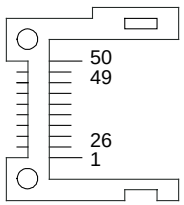
Operating temperature: -20°C to +60°C (-4°F to 140°F)

SRAM

Reserved NVRAM Socket for the Optional 512 KB battery backed SRAM (NVRAM )

# External Connectors for Impact-E20

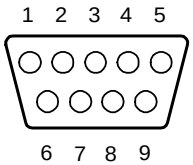
## 2.5 CompactFlash Connector IDE2 (Slave), IDE3 (Master)




| Pin No. | Description | Pin No. | Description |
|---|---|---|---|
| 1 | Gnd | 2 | Data 3 |
| 3 | Data 4 | 4 | Data 5 |
| 5 | Data 6 | 6 | Data 7 |
| 7 | HDC CS100 | 8 | Gnd |
| 9 | Gnd | 10 | Gnd |
| 11 | Gnd | 12 | Gnd |
| 13 | +5V | 14 | Gnd |
| 15 | Gnd | 16 | Gnd |
| 17 | Gnd | 18 | Disk Address 2 |
| 19 | Disk Address 1 | 20 | Disk Address 0 |
| 21 | Data 0 | 22 | Data 1 |
| 23 | Data 2 | 24 | IOCS16# (NC) |
| 25 | CF_CD2# (Pull-down) | 26 | CF_CD1# (Pull-down) |
| 27 | Data 11 | 28 | Data 12 |
| 29 | Data 13 | 30 | Data 14 |
| 31 | Data 15 | 32 | HDC CS300 |
| 33 | CF_VS1# (NC) | 34 | IOR |
| 35 | IOW | 36 | CF_WE# (+5V) |
| 37 | Interrupt 15 | 38 | +5V |
| 39 | CF_CSEL# (Master or Slave) | 40 | CF_VS2# (NC) |
| 41 | Reset # | 42 | IOCHRDY |
| 43 | DMA REQ / DACK (NC) | 44 | DMA ACK# /CF_REG# (+5V) |
| 45 | HDD Active Led | 46 | DMA66 Detect / CF_PDIAG# |
| 47 | Data 8 | 48 | Data 9 |
| 49 | Data 10 | 50 | Gnd |

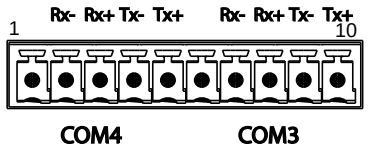
## 2.6 SIO connector COM1(P1),COM2(P2)

The Impact-E20 provides two D-sub 9-pin connectors, which offers standard 232 serial communication interface port of COM1/COM2.



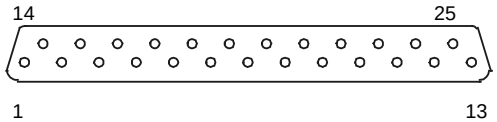

| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 1 | Data Carrier Detect# | 2 | Serial Input |
| 3 | Serial Output | 4 | Data Terminal Ready# |
| 5 | Chassis Gnd | 6 | Data Set Ready# |
| 7 | Request To Send# | 8 | Clear To Send# |
| 9 | Ring Indicator# | | |

## 4.7 RS422/485 COM3,COM4(J4)~COM3 : IRQ10 , COM4 : IRQ5



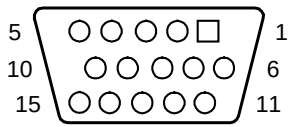

| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 1 | COM3/ RS422/485 TX+ | 2 | COM3/ RS422/485 TX- |
| 3 | COM3/RS422 RX+ | 4 | COM3/RS422 RX- |
| 5 | Gnd | 6 | COM4/ RS422/485 TX+ |
| 7 | COM4/ RS422/485 TX+ | 8 | COM4/RS422 RX+ |
| 9 | COM4/RS422 RX- | 10 | Gnd |

## 2.8 PIO connector ( J7)



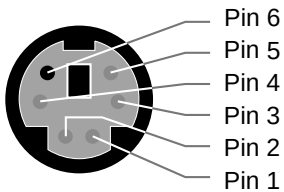

| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 1 | Line Print Strobe | 2 | Parallel Data 0 |
| 3 | Parallel Data 1 | 4 | Parallel Data 2 |
| 5 | Parallel Data 3 | 6 | Parallel Data 4 |
| 7 | Parallel Data 5 | 8 | Parallel Data 6 |
| 9 | Parallel Data 7 | 10 | Acknowledge |
| 11 | BUSY | 12 | Paper empty |
| 13 | Select | 14 | Auto feed |
| 15 | Error | 16 | Initialize |
| 17 | Select input | 18 | Chassis Gnd |
| 19 | Chassis Gnd | 20 | Chassis Gnd |
| 21 | Chassis Gnd | 22 | Chassis Gnd |
| 23 | Chassis Gnd | 24 | Chassis Gnd |
| 25 | Chassis Gnd | 26 | Chassis Gnd |

## 2.9 VGA connector ( CON1)



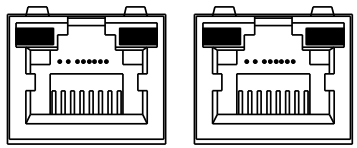

| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 1 | RED | 2 | GREEN |
| 3 | BLUE | 4 | NC |
| 5 | Gnd | 6 | Gnd |
| 7 | Gnd | 8 | Gnd |
| 9 | KEY | 10 | Gnd |
| 11 | NC | 12 | ID1 |
| 13 | Hsync | 14 | Vsync |
| 15 | ID3 | | |

## 2.10 Keyboard + mouse connector ( CON3 )




| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 1 | KBData- | 2 | MouseData |
| 3 | Gnd | 4 | VCC |
| 5 | KBClk | 6 | MouseClk |

## 2.11 LAN connector ( CN2,LAN1 : CN1, LAN2 )




| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 1 | TX+ | 2 | TX- |
| 3 | RX+ | 4 | LAN1 |
| 5 | LAN1 | 6 | RX- |
| 7 | LAN2 | 8 | LAN2 |
| 9 | LAN Speed LED | 10 | Vcc3 |
| 11 | LAN Link LED | 12 | LAN ACT LED# |

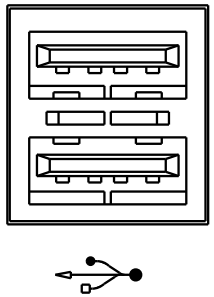
## 2.12 Line out connector ( J3 )

| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 1 | Gnd | 2 | SNDL |
| 3 | SNDR | 4 | Gnd |
| 5 | Gnd | | |

## 2.13 MIC connector ( J5 )

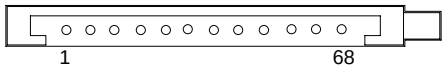
| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 1 | Gnd | 2 | MIC_IN |
| 3 | VCC5 | 4 | Gnd |
| 5 | Gnd | | |

## 2.14 USB connector ( CON2:USB0/1,CON4:USB2/3 )



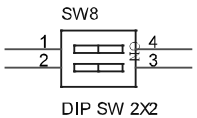
| Pin No. | Description | Pin No. | Description |
|---|---|---|---|
| 1 | VCC5 | 2 | USB- |
| 3 | USB+ | 4 | USB Gnd |
| 5 | VCC5 | 6 | USB1- |
| 7 | USB1+ | 8 | USB Gnd |

## 2.15 PCMCIA connector ( CN3)




| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 1 | Gnd | 35 | Gnd |
| 2 | D3 | 36 | CO1# |
| 3 | D4 | 37 | D11 |
| 4 | D5 | 38 | D12 |
| 5 | D6 | 39 | D13 |
| 6 | D7 | 40 | D14 |
| 7 | CE1# | 41 | D15 |
| 8 | A10 | 42 | CE2# |
| 9 | OE# | 43 | VS1 |
| 10 | A11 | 44 | IORD# |
| 11 | A9 | 45 | IOWR# |
| 12 | A8 | 46 | A17 |
| 13 | A13 | 47 | A18 |
| 14 | A14 | 48 | A19 |
| 15 | WE# | 49 | A20 |
| 16 | Ready | 50 | A21 |
| 17 | Vcc | 51 | Vcc |
| 18 | VPP | 52 | VPP |
| 19 | A16 | 53 | A22 |
| 20 | A15 | 54 | A23 |
| 21 | A12 | 55 | A24 |
| 22 | A7 | 56 | A25 |
| 23 | A6 | 57 | VS2# |
| 24 | A5 | 58 | Reset |
| 25 | A4 | 59 | WAIT# |
| 26 | A3 | 60 | INPACK# |
| 27 | A2 | 61 | REG# |
| 28 | A1 | 62 | BVD2 |
| 29 | A0 | 63 | BVD1 |
| 30 | D0 | 64 | D8 |
| 31 | D1 | 65 | D9 |
| 32 | D2 | 66 | D10 |
| 33 | WP | 67 | CO2# |
| 34 | Gnd | 68 | Gnd |

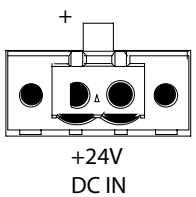
## 2.16 System RESET Select Switch (SW8)




| Pin | **Definition** |
|---|---|
| 1~4 | Power Good in* |
| 2~3 | Resume Reset |

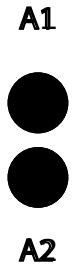
* default setting

## 2.17 DC Power input Voltage ( J9 )



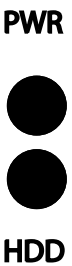

| Pin No. | Function Description |
|---|---|
| 1 | GND |
| 2 | +9V~+36V DC INPUT |

## 2.18 GPIO LED I/O PORT Address & DATA



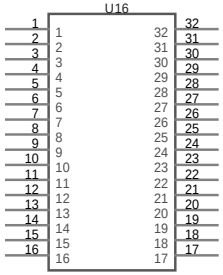

| LED No. | Function Description |
|---|---|
| A1 — I/O PORT Address : EEEH | DATA : 01H(LIGHT) 02H(DART) |
| A2 —I/O PORT Address : EEEH | DATA : 04H(LIGHT) 08H(DART) |

## 2.19 POWER ON & IDE Active LED (LED2)



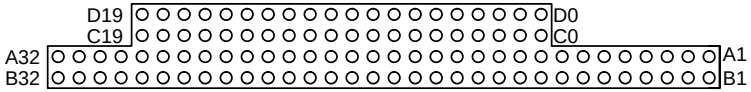
# Internal Connectors for Impact-E20

## 2.20 VRAM PIN Defined(U16)




| Pin No. | Description | Pin No. | Description |
|---|---|---|---|
| 1 | ISA A18 | 17 | ISA D3 |
| 2 | ISA A16 | 18 | ISA D4 |
| 3 | ISA A14 | 19 | ISA D5 |
| 4 | ISA A12 | 20 | ISA D6 |
| 5 | ISA A7 | 21 | ISA D7 |
| 6 | ISA A6 | 22 | ROM CS# |
| 7 | ISA A5 | 23 | ISA A10 |
| 8 | ISA A4 | 24 | BMEMR# |
| 9 | ISA A3 | 25 | ISA A11 |
| 10 | ISA A2 | 26 | ISA A9 |
| 11 | ISA A1 | 27 | ISA A8 |
| 12 | ISA A0 | 28 | ISA A13 |
| 13 | ISA D0 | 29 | BMEMW# |
| 14 | ISA D1 | 30 | ISA A17 |
| 15 | ISA D2 | 31 | ISA A15 |
| 16 | GND | 32 | +5V |

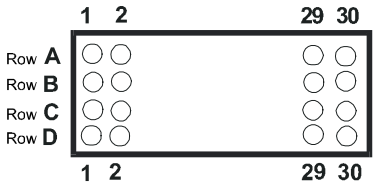
## 2.21 PC/104-PLUS connector ( J8A~ISA )




| Pin | D | C |
|---|---|---|
| 0 | GND | GND |
| 1 | MEMCS16* | SBHE* |
| 2 | IOCS16* | LA23 |
| 3 | IRQ10 | LA22 |
| 4 | IRQ11 | LS21 |
| 5 | IRQ12 | LS20 |
| 6 | IRQ15 | LS19 |
| 7 | IRQI4 | LA18 |
| 8 | DACK0* | LA17 |
| 9 | DRQ0 | MEMR* |
| 10 | DACK5* | MEMW* |
| 11 | DRQ5 | SD8 |
| 12 | DACK6* | SD9 |
| 13 | DRQ6 | SD10 |
| 14 | DACK7* | SD11 |
| 15 | DRQ7 | SD12 |
| 16 | +5V | SD13 |
| 17 | MASTER* | SD14 |
| 18 | GND | SD15 |
| 19 | GND | GND/KEY |

| Pin | A | B |
|---|---|---|
| 1 | IOCHCK* | GND |
| 2 | D7 | RSTDRV |
| 3 | D6 | +5V |
| 4 | D5 | IRQ9 |
| 5 | D4 | N/A |
| 6 | D3 | DRQ2 |
| 7 | D2 | -12V |
| 8 | D1 | ENDXFR* |
| 9 | D0 | +12V |
| 10 | IOCHRDY | GND/KEY |
| 11 | AEN | SMEMW* |
| 12 | A19 | SMEMR* |
| 13 | A18 | IOW* |
| 14 | A17 | IOR* |
| 15 | A16 | DACK3* |
| 16 | A15 | DRQ3 |
| 17 | A14 | DACK1* |
| 18 | A13 | DRQ1 |
| 19 | A12 | REFRESH* |
| 20 | A11 | SYSCLK |
| 21 | A10 | IRQ7 |
| 22 | A9 | IRQ6 |
| 23 | A8 | IRQ5 |
| 24 | A7 | IRQ4 |
| 25 | A6 | IRQ3 |
| 26 | A5 | DACK2* |
| 27 | A4 | TC |
| 28 | A3 | BALE |
| 29 | A2 | +5V |
| 30 | A1 | OSC |
| 31 | A0 | GND |
| 32 | GND | GND |

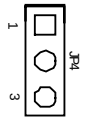
## 2.22 PC/104-PLUS connector ( PCI )




| Pin | Definition | | | |
|---|---|---|---|---|
| | A | B | C | D |
| 1 | Gnd/5.0V KEY | Reserved | +5V | AD00 |
| 2 | VI/O | AD02 | AD01 | +5V |
| 3 | AD05 | Gnd | AD04 | AD03 |
| 4 | C/BE0# | AD07 | Gnd | AD06 |
| 5 | Gnd | AD09 | AD08 | Gnd |
| 6 | AD11 | VI/O | AD10 | M66EN |
| 7 | AD14 | AD13 | Gnd | AD12 |
| 8 | +3.3V | C/BE1# | AD15 | +3.3V |
| 9 | SERR# | GND | SB0# | PAR |
| 10 | Gnd | PERR# | +3.3V | SDONE |
| 11 | STOP# | +3.3V | LOCK# | Gnd |
| 12 | +3.3V | TRDY# | Gnd | DEVSEL# |
| 13 | FRAME# | Gnd | IRDY# | +3.3V |
| 14 | Gnd | AD16 | +3.3V | C/BE2# |

| | | | | |
|---|---|---|---|---|
| 15 | AD18 | +3.3V | AD17 | Gnd |
| 16 | AD21 | AD20 | Gnd | AD19 |
| 17 | +3.3V | AD23 | AD22 | +3.3V |
| 18 | IDSEL0 | Gnd | IDSEL1 | IDSEL2 |
| 19 | AD24 | C/BE3# | VI/O | IDSE;3 |
| 20 | Gnd | AD26 | AD25 | Gnd |
| 21 | AD29 | +5V | AD28 | AD27 |
| 22 | +5V | AD30 | Gnd | AD31 |
| 23 | REQ0# | Gnd | REQ1# | VI/O |
| 24 | Gnd | REQ2# | +5V | GNT0# |
| 25 | GNT1# | VI/O | GNT2# | Gnd |
| 26 | +5V | CLK0 | Gnd | CLK1 |
| 27 | CLK2 | +5V | CLK3 | Gnd |
| 28 | Gnd | INTD# | +5V | RST# |
| 29 | +12V | INTA# | INTB# | INTC# |
| 30 | -12V | Reserved | Reserved | Gnd/3.3V KEY |

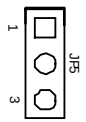
## 2.23 DC Adapter Input Voltage Select ( JP4 )




| Pin No. | Status | Function Description |
|---|---|---|
| 1-2 | Short | 9V-12V (NO +12V and -12v) |
| 2-3 | Short* | 13V-36V |

* default setting

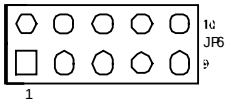
## 2.24 CMOS Input Voltage Select ( JP5 )




| Pin No. | Status | Function Description |
|---|---|---|
| 1-2 | Short* | VBAT IN |
| 2-3 | Short | Clear CMOS |

* default setting

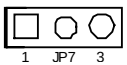
## 2.25 CPLD Programmer PIN Header(JP6)




| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 1 | TCK | 2 | GND |
| 3 | TDO | 4 | +3.3V |
| 5 | TMS | 6 | N/A |
| 7 | N/A | 8 | N/A |
| 9 | TDI | 10 | +3.3V |

* default setting

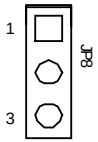
## 2.26 CF(IDE2) Primary Master/Slave Select ( JP7 )




| Pin No. | Status | Function Description |
|---|---|---|
| 1-2 | Short* | Slave |
| 2-3 | Short | Master |

* default setting

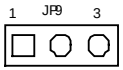
## 2.27 CF(IDE3) Secondary Master/Slave Select ( JP8 )




| Pin No. | Status | Function Description |
|---|---|---|
| 1-2 | Short | Slave |
| 2-3 | Short* | Master |

* default setting

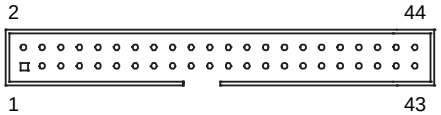
## 2.28 LVDS Power input Voltage Select ( JP9 )




| Pin No. | Status | Function Description |
|---|---|---|
| 1-2 | Short | +5V IN |
| 2-3 | Short* | +3.3V IN |

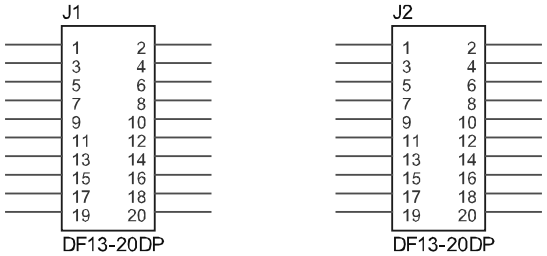
* default setting

## 2.29 IDE Connector (IDE1)




| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 1 | Rstdrv- | 2 | Gnd |
| 3 | Ided7 | 4 | Ided 8 |
| 5 | Ided 6 | 6 | Ided 9 |
| 7 | Ided 5 | 8 | Ided 10 |
| 9 | Ided 4 | 10 | Ided 11 |
| 11 | Ided 3 | 12 | Ided 12 |
| 13 | Ided 2 | 14 | Ided 13 |
| 15 | Ided 1 | 16 | Ided 14 |
| 17 | Ided 0 | 18 | Ided 15 |
| 19 | Gnd | 20 | NC |
| 21 | Idereq- | 22 | Gnd |
| 23 | Ideiow- | 24 | Gnd |
| 25 | Ideior- | 26 | Gnd |
| 27 | Iderdy | 28 | IDE-PD1 |
| 29 | Ideack- | 30 | Gnd |
| 31 | Ideirq | 32 | NC |
| 33 | DA1 | 34 | 66 Detect |
| 35 | DA0 | 36 | DA2 |
| 37 | SCS1 | 38 | SCS3 |
| 39 | Ideact- | 40 | Gnd |
| 41 | VCC5 | 42 | VCC |
| 43 | Gnd | 44 | NC |

## 2.30 LVDS connector ( J1,J2)



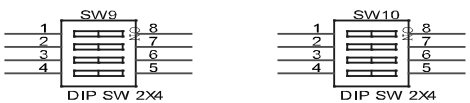

### LVDS connector J1

| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 1 | LVDS_CLK | 2 | LVDS_DAT |
| 3 | Panel_VDD | 4 | LVDS_1 |
| 5 | LVDS_9 | 6 | LVDS_0 |
| 7 | LVDS_8 | 8 | Panel_VDD |
| 9 | GND | 10 | LVDS_3 |
| 11 | LVDS_7 | 12 | LVDS_2 |
| 13 | LVDS_6 | 14 | GND |
| 15 | GND | 16 | Panel_back-light |
| 17 | LVDS_5 | 18 | Panel_back-light |
| 19 | LVDS_4 | 20 | GND |

### LVDS connector J2

| Pin | **Definition** | Pin | **Definition** |
|---|---|---|---|
| 1 | LVDS_CLK | 2 | LVDS_DAT |
| 3 | Panel_VDD | 4 | LVDS_11 |
| 5 | LVDS_19 | 6 | LVDS_10 |
| 7 | LVDS_18 | 8 | Panel_VDD |
| 9 | GND | 10 | LVDS_13 |
| 11 | LVDS_17 | 12 | LVDS_12 |
| 13 | LVDS_16 | 14 | GND |
| 15 | GND | 16 | Panel_back-light |
| 17 | LVDS_15 | 18 | Panel_back-light |
| 19 | LVDS_14 | 20 | GND |

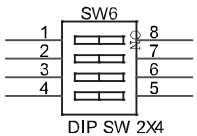
## 2.31 COM3(SW9),COM4(SW10) IRQ Select switch




| COM3(SW9) | | COM4(SW9) | |
|---|---|---|---|
| Pin | **Definition** | Pin | **Definition** |
| 1~8 | IRQ12 | 1~8 | IRQ12 |
| 2~7 | IRQ10* | 2~7 | IRQ10 |
| 3~6 | IRQ5 | 3~6 | IRQ5* |
| 4~5 | IRQ6 | 4~5 | IRQ6 |

* default setting

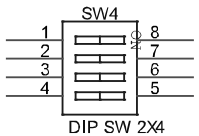
## 2.32 R5C485(U27) IDSEL Select switch (SW6)

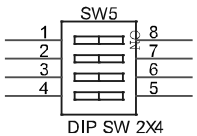



| SW6 | |
|---|---|
| Pin | **Definition** |
| 1~8 | AD19* |
| 2~7 | AD23 |
| 3~6 | AD27 |
| 4~5 | AD31 |

* default setting

## 2.33 PC/104-PLUS (J8B) IDSEL Select switch (SW4,SW5)

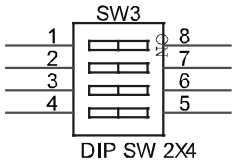



| IDSEL0(SW4) | | IDSEL1(SW5) | |
|---|---|---|---|
| Pin | **Definition** | Pin | **Definition** |
| 1~8 | AD16 | 1~8 | AD17 |
| 2~7 | AD20* | 2~7 | AD21* |
| 3~6 | AD24 | 3~6 | AD25 |
| 4~5 | AD28 | 4~5 | AD29 |

* default setting

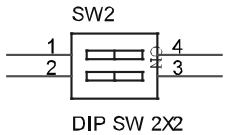
## 2.34 VT6105G(U28) IDSEL Select switch (SW3)




| SW3 | |
|---|---|
| Pin | **Definition** |
| 1~8 | AD18 |
| 2~7 | AD22 |
| 3~6 | AD26* |
| 4~5 | AD30 |

* default setting

## 2.35 RS485/422 Autoswitch Select switch (SW2)




| SW2 | |
|---|---|
| Pin | **Definition** |
| 1~4 | |
| COM3* | ON : RS422 Slave and RS485 Autodetect and Autoswitch |
| | OFF : RS422 Master |
| 2~3 | |
| COM4* | ON : RS422 Slave and RS485 Autodetec and Autoswitch |
| | OFF : RS422 Master |

* default setting

# Chapter 3 Reference and Installation

# Chapter 3 Reference and Installation

## 3.1 Packing List for Impact-E Series

| | |
|---|---|
| CD with driver and user manual x1 | P/N: 602D00CD89X0 |
| IDE cable x 1 | P/N: 60233IDE54X0 |
| PS/2 keyboard/mouse cable x 1 | P/N: 60233MK202X0 |
| 2-pin power terminal block x1 | P/N: 4NCPF00204X0 |
| 10-pin RS422/485 terminal block x1 | P/N: 4NCPF01002X0 |

Optional:

| | |
|---|---|
| Power Adapter (65W, 19V) (w/US type power cord) x 1 | P/N: 7400065001X0 |
| Power Adapter (65W, 19V) (w/Schuko type power cord) x 1 | P/N: 7400065002X0 |
| Power Adapter (65W, 19V) (w/UK type power cord) x 1 | P/N: 7400065003X0 |
| Impact-E Expansion DIY Kit | P/N: 5060900046X0 |

If any of these items are missing or damaged, please contact Amplicon immediately.

While unpacking, check for signs of shipping damage. (For example, damaged box, scratches, dents, etc.) If it is damaged or it fails to meet the specifications, notify our service department or your local sales representative immediately. Also notify the carrier. Retain the shipping carton and packing material for inspection by the carrier. After inspection, we will make arrangements to repair or replace

## 3.2 Specifications

| | |
|---|---|
| Construction: | Aluminum chassis with fanless design |
| Dimensions: | 195mm (W) x 268mm (D) x 80mm (H) |
| Main board: | ICES120 |
| Main memory: | One 200-pin SODIMM socket for up to 1GB Non-ECC Non-Registered DDR SDRAM memory |
| Device: | On-board CompactFlash socket x 2 (internal x 1, external x 1)<br>On-board CompactFlash socket x 1<br>Internal 2.5” HDD Drive bay x 1 |
| Front I/O Ports: | Power / HDD Status LEDs<br>2 LEDs, connect to GPIO, programmable for Alarm or other purpose defined by developer<br>PCMCIA Socket x 1<br>DB9 COM1 and COM2<br>Screw Terminal COM3 and COM4<br>External access CompactFlash Socket (2nd Com pactFlash available NICE 3200 only)<br>USB 2.0 x 2 |
| Rear I/O Ports: | RJ45 with LED connector x 2<br>USB 2.0 Ports x 2<br>KB Mouse connector<br>+24V DC Power Input |

Power Reset Button
VGA Connector (DB15)
Audio Out and Mic In Connector.
LPT Port x 1

Expansion Slots:

PCMCIA Slot x1:
Supports CardBus 32-bit and 16-bit cards
PC/104-Plus (ISA+PCI):
Supports ISA device x1 / PCI device x2
NVRAM Socket

Power Supply: DC to DC power design on-board support
9V DC ~ 36V DC (Max. 50W) Optional External 65W
AC adapter x1

**NOTE:** If you use 9V~12V voltage, please change the JP4 to 1-2, and no +12V and -12V power output. Default JP4 is 3-4 while you use 13V~36V voltage.

Environment:

Operating Temperature: Ambient with air:
5℃ to 40℃ (HDD)(41° F to 104° F)
-10℃ to 50℃ (CF)(14° F to 122° F)
Tcase ( Surface Temperature of Chassis)
5℃ ~ 45℃ (HDD) (41℉ to 113℉)
-10℃ ~ 50℃ (CF) (14℉ to 122℉)

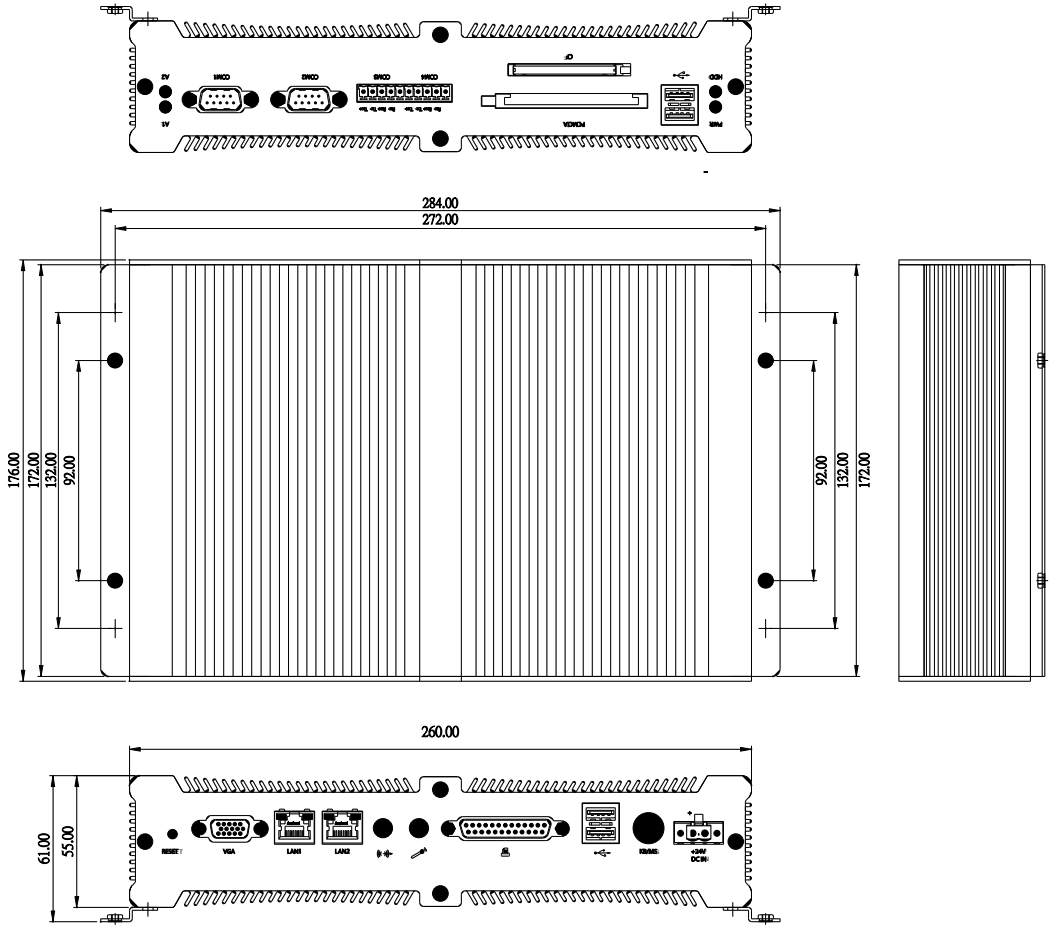
Storage Temperature: -20℃ to 80℃ (-4℉ to 176℉)

Relative Humidity: 10% to 90% (Non-condensing)

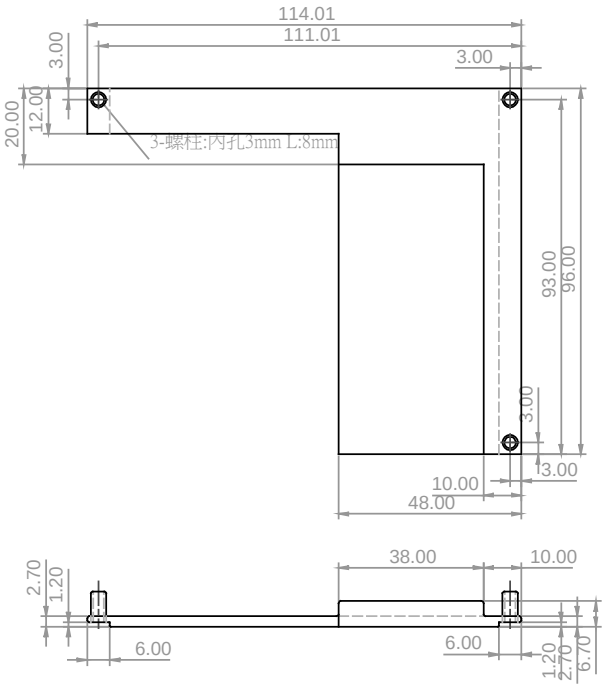
**Certifications:** CE approval /FCC Class A

Software: WIndows® XP, WIndows® 2000/2003, Linux

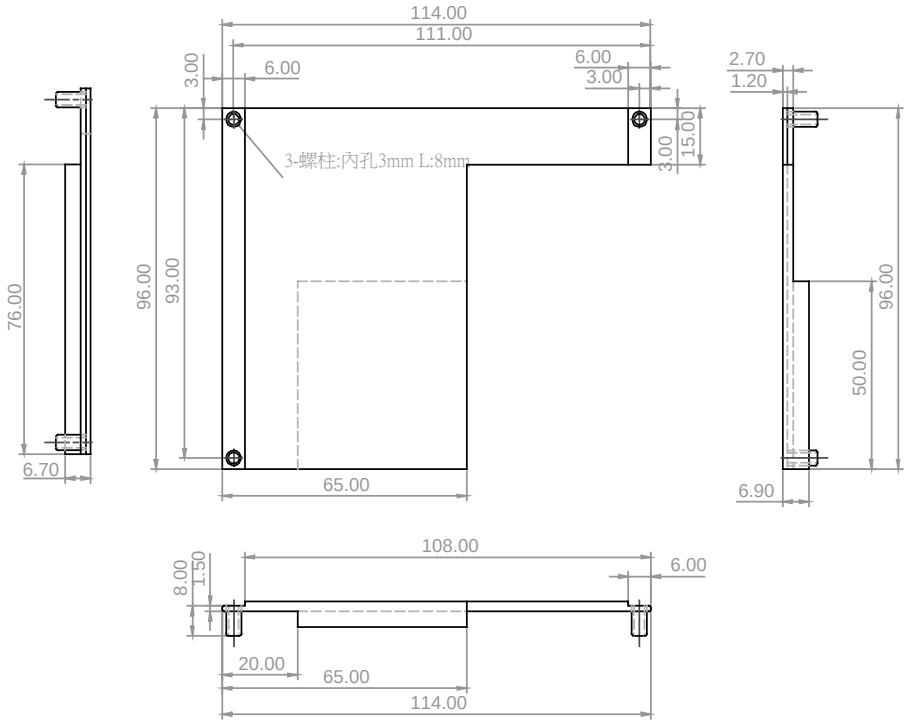
## 3.3 Dimensions



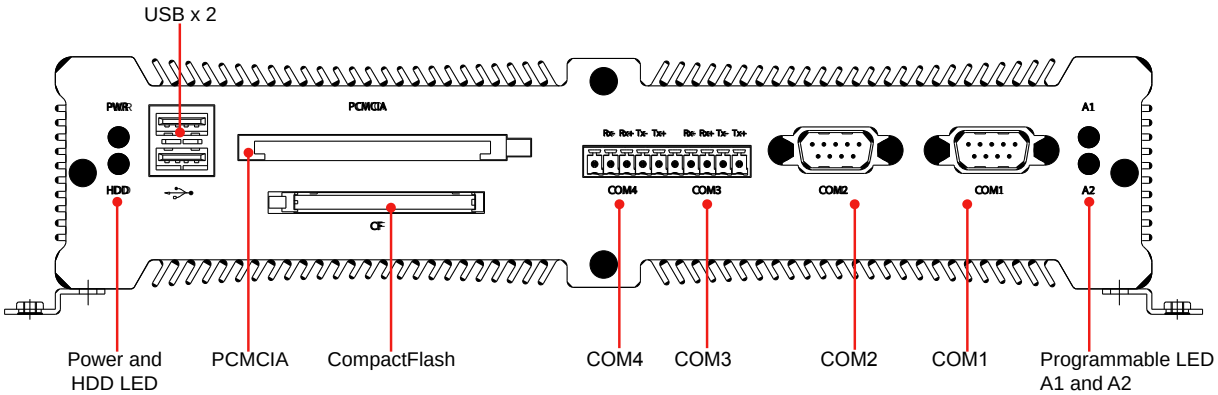
## 3.4 Heatsink Dimensions

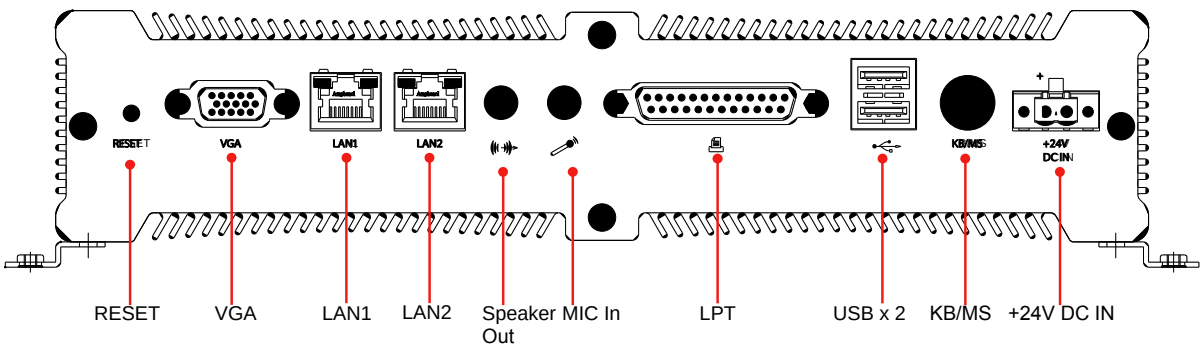



## 3.5 Heatsink Dimensions



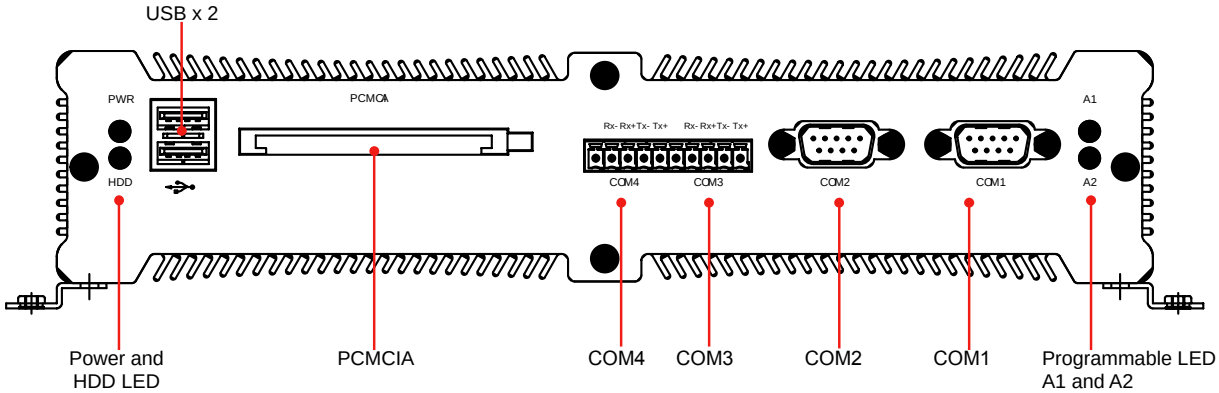
## 3.6 Front and Back Layout

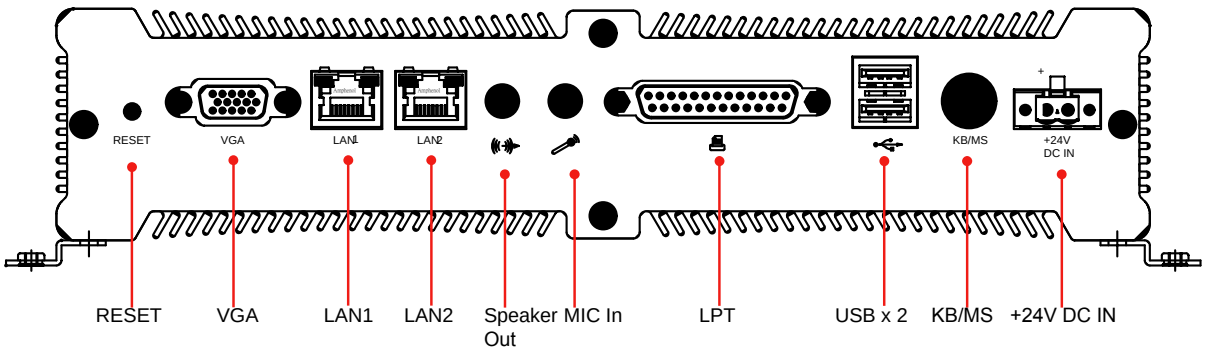


# Chapter 3 Reference and Installation

## 3.7 Front and Back Layout



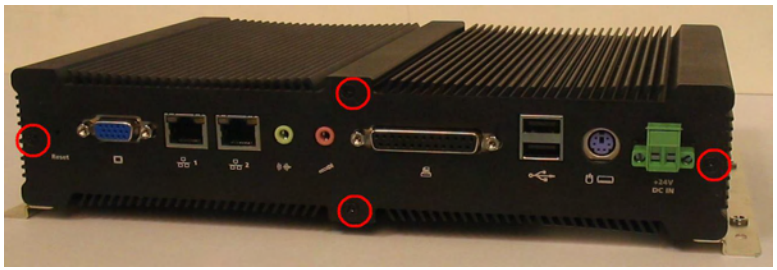



## 3.8 Disassembly Procedures

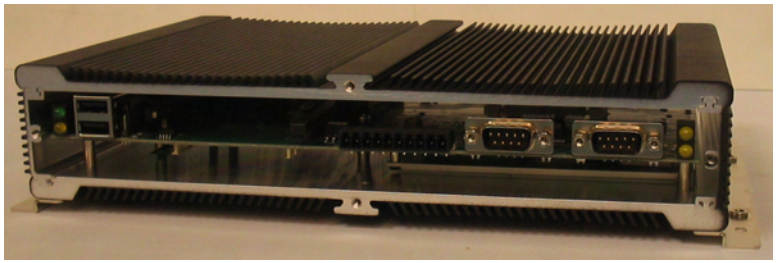
**NOTE:** If you would like to slide off the top cover only, just the front or back faceplate needs to be removed (only one). For example, to install a HDD you only need to remove the top cover of the chassis.

1. Remove the green COM 3 and COM 4 and Power connectors from front and back cover plate.

2. Unscrew the 4 screws from the front and back cover plate.



3. Remove the front cover plate.



4. Remove the back cover plate.

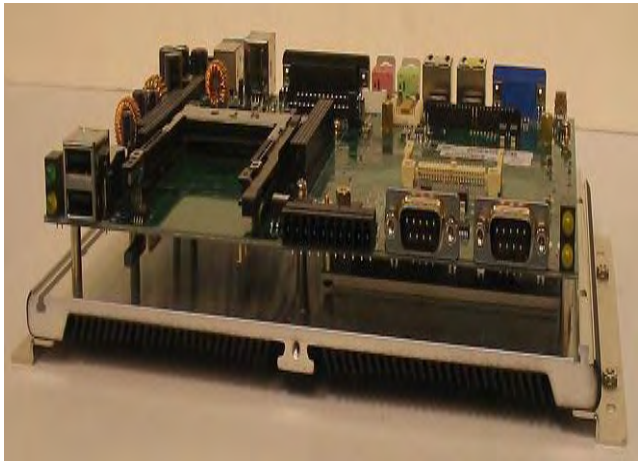
5. With front and back faceplates removed, slide the top cover off from either the front or the back.

6. View with front and back faceplates removed, and top cover off.

7. With the top cover off, now slide the right and left side plates off.

**NOTE:** Each side plate is connected to the base with a male and female groove

8. View with front/back faceplates, sides and cover removed.

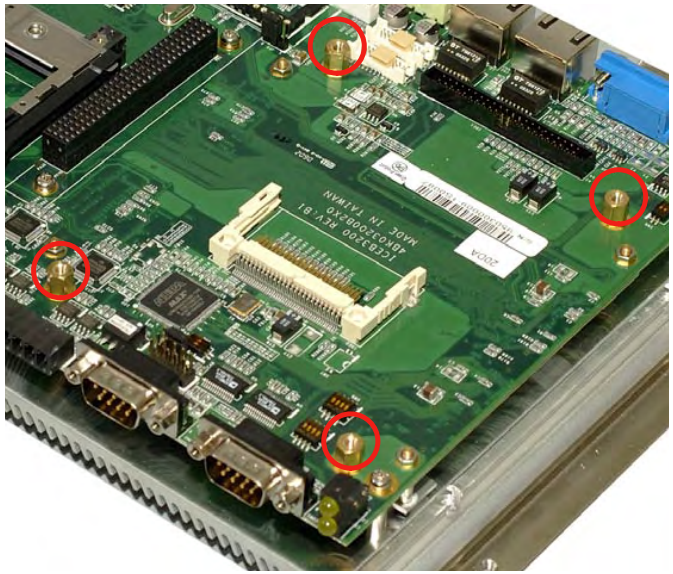


## 3.9 Installing the HDD Mounting Kit

**NOTE:** If you would like to slide off the top cover, only the front or back faceplate needs to be removed (only one). For example, for installing a HDD you only need to remove the top cover of the chassis.

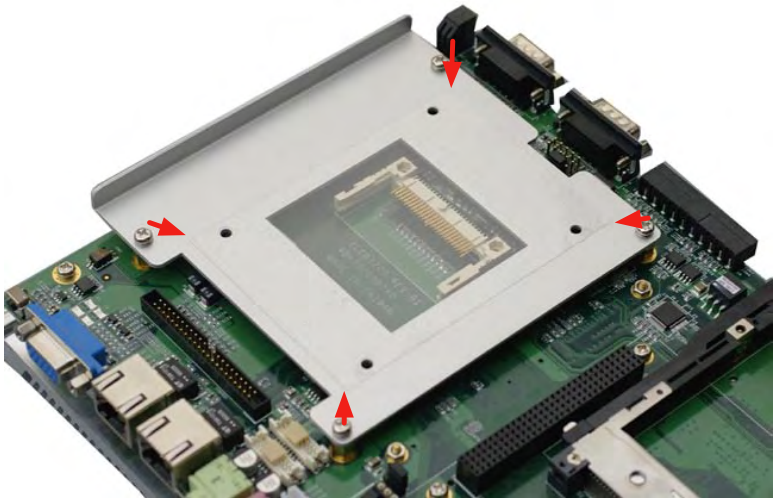
With front and back faceplates and top cover removed, it would be the correct time to install the HDD kit if you wanted.

1. First, locate the HDD mounting holes on the carrier board as shown below.



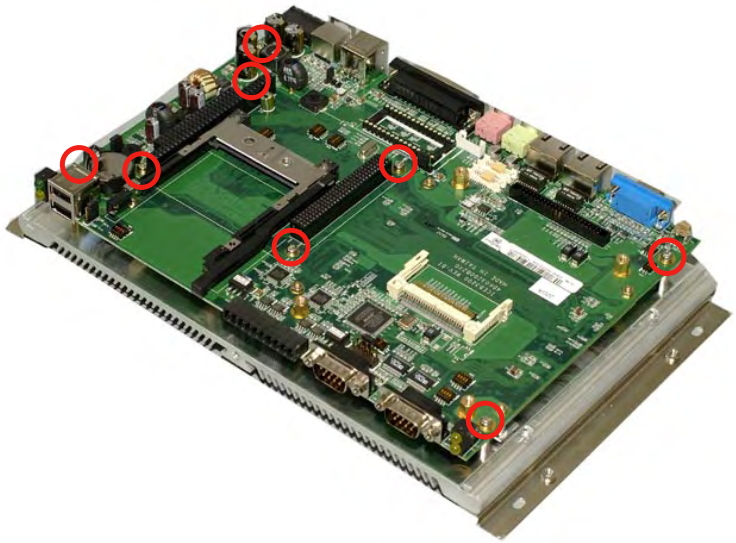
2. The HDD kit comes with a mounting bracket, a cable, some screws and a plastic EMI shield. Since the plastic shield does not come attached, you need to stick it on the bracket as shown in the figure below. The same red arrows mark the corners of the plastic shield.

Connect the HDD bracket with 4 screws as shown below and apply the EMI plastic shield. There are also 4 holes used to mount the HDD to the bracket. It is okay to make holes through the EMI shield for these screws, since it will overlap at least two of these HDD mounting holes.

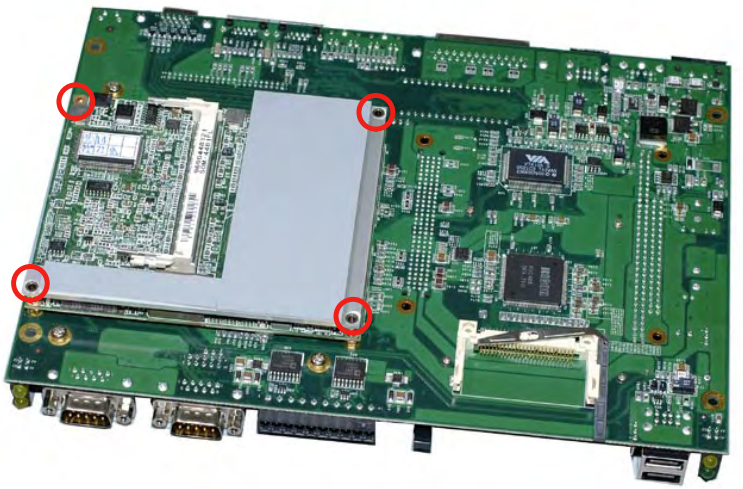


## 3.10 Continuing the Disassembly

1. With front and back faceplates and top cover removed, to continue with the disassembly remove the 8 screws holding the carrier board to the chassis base.



2. After removing the carrier board, flip the board over to find the ETX module with heatsink.



## 3.11 Installing SODIMM Memory

At this point, now would be the time to change the memory if you wanted. Please remember that your comes with memory preinstalled

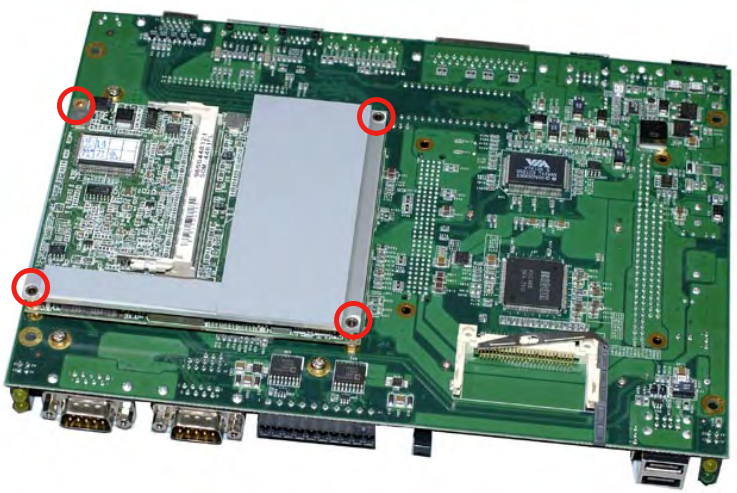
Install the memory just as you would regularly SODIMM. Line up the memory pins correctly coming in at an angle, start the pins and push in and down until the sides of the memory snaps into the clip.

**⚠WARNING:** When you install memory into the socket, make sure to tilt it 45 degrees and then slide it in. Be sure to read the memory installation instructions to prevent damaging the memory during installation.

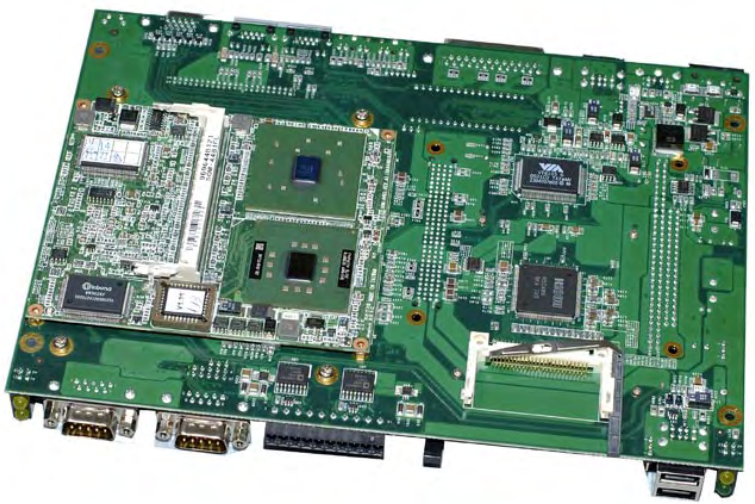
The chassis base shown below. Notice the 8 supports to mount the carrier board.

## 3.12 Removing the ETX Module and Heatsink

1. To remove the heatsink and ETX module, remove the 4 screws at the corner of the ETX module. Please note these same 4 screws also secure the heatsink.



2. With the ETX module mounting screws removed, simply pull up on the module on four corners to pop the module out of the four ETX sockets that connect to the carrier board.



The backside view of the carrier board with ETX module removed.

3. To reassemble, just reverse the steps.